PATENT SPECIFICATION 751,619

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COMPLETE SPECIFICATION.

Improvements relating to Silencers for Gaseous Currents.

We, SACKVILLE LIMITED, a Registered British Company, of Sackville Works, Mount Street, Nechells, Birmingham 7, and EDWARD ALEXANDER LAWSON, a British Subject, of the Company's address do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to silencers for gaseous currents of internal combustion engines, especially although not exclusively for engines of motor cycles, and is particularly concerned with a silencer of the kind comprising a casing containing a filling of fibrous material, such as steel wool, glass wool or asbestos fibre which surrounds a perforated tubular member made of more rigid material, such as expanded metal, wire netting or gauze, and through which member the gaseous currents can directly escape.

In such known silencers, the filling is of a composite construction and is usually made by rolling one end of a sheet of expanded metal into a tube, placing steel wool on the sheet and rolling the whole up into a cylinder so as to form a composite filling of alternate layers of steel wool and expanded metal. The cylinder is slipped into an open end of the silencer casing and then an end cap, mounting the outlet of the silencer is fitted on the end of the casing and welded thereto.

An important disadvantage of this construction lies in the fact that the composite filling is permanently contained in the casing. In the course of time, this filling becomes loaded with oil and carbon and fails to damp high velocity sound waves.

The primary object of the present invention is to provide a silencer which does not possess this defect.

According to the present invention in a silencer of the kind referred to, the silencer casing is provided with a tubular liner which houses a filling of fibrous material surrounding a central perforated tube of more rigid material, the liner and its contents being removably held as a unit in the casing.

The liner may be secured in the casing by a clamping bolt and nut by which end caps of the inlet and outlet pipes are secured to the respective ends of the casing.

The tubular liner may be of any required cross section, such as cylindrical, tapered or oval in order to fit silencer casings of corresponding shape.

A silencer according to the invention for use on a motor cycle engine is illustrated, by way of example, on the accompanying drawing wherein:—

Fig. 1 is a longitudinal sectional elevation of the silencer.

Fig. 2 is a composite view showing in perspective the components of Fig. 1 dismantled.

As will be seen from the drawing, the silencer comprises a cylindrical casing 1, having a gas inlet 2 and an outlet 3 formed with a fin 4. The inlet 2 consists of a tube 5 provided at one end with lugs 6 to be used for bolting it to an end of an exhaust pipe, the other end being provided with a cylindrical cap 7 which fits over one end of the casing 1. Similarly, the outlet 3 has a cylindrical cap 9 which fits over the other end of the casing.

The interior of the casing 1 is provided with a cylindrical liner 10 which houses a filling of fibrous material 11, this material surrounding a central perforated tube 12 coaxial with the liner 10. The liner 10, material 11, and perforated tube 12 constitute a unitary or cartridge structure which can be inserted within the casing 1 and removed from it, as and when desired.

The fibrous material 11 may consist of steel wool, glass wool or asbestos fibre which may be wound, or wrapped around the tube

12 constructed, for example, of expanded metal, wire-netting, or metal gauze, the wrapping or winding on the tube being inserted into the liner 10 and held compactly in position, for example by pressing an end 13 of the liner as an inwardly turned flange over the end of a ring 14 fitted coaxially over the respective ends of the perforated tube 12. The liner 10 and its components 11 and 12 are rigidly secured in the casing 1 by means of a clamping bolt 15 and nut 16 which bolt extends coaxially in the perforated tube 12 and serves to couple the end caps 7, 9 by pressing the rim of each cap against an annular bead 17 adjoining the respective ends of the casing 1.

The interior of the end cap 7 is provided with lateral ribs 18 capable of exerting at their longitudinal edges light pressure on the adjoining end of the liner unit, as seen in Fig. 1.

The casing 1 and the liner 10 may be of any of the known cross-sections common in silencer construction, such as cylindrical, oval or tapered. This casing may be made of light gauge sheet formed into a tube with the longitudinal edges butt or lap welded. The ends of the liner may be pressed inwardly against the extreme ends of the filling so as to prevent end wise spreading of the fibres.

It will be appreciated that when the filling of a silencer according to the invention becomes oiled up and/or carbon laden, it is only necessary to disconnect the end cap 9 when the liner and its contents can be slidably withdrawn as a unit and a replacement readily fitted.

What we claim is:—

1. A silencer of the kind referred to, wherein the silencer casing is provided with a tubular liner which houses a filling of fibrous material surrounding a central perforated tube of more rigid material, the liner and its contents being removably held as a unit in the casing.

2. A silencer according to Claim 1, wherein the liner is secured in the casing by a clamping bolt and nut by which end caps of the inlet and outlet pipes of the silencer are secured to the respective ends of the casing.

3. A silencer according to Claim 2, wherein the liner is cylindrical, tapered or oval in order to fit silencer casings of corresponding shape.

4. A silencer according to any of the preceding claims, wherein the ends of the liner are turned inwardly against the extreme ends of the filling.

5. A silencer for gaseous currents constructed substantially as described with reference to or as illustrated by the accompanying drawing.

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PROVISIONAL SPECIFICATION.

Improvements relating to Silencers for Gaseous Currents.

We, SACKVILLE LIMITED, a Registered British Company, of Sackville Works, Mount Street, Nechells, Birmingham 7, and EDWARD ALEXANDER LAWSON, a British Subject, of the Company's address do hereby declare this invention to be described in the following statement:—

This invention relates to silencers for gaseous currents of internal combustion engines and is particularly concerned with a silencer comprising a casing containing a filling of fibrous material, such as steel wool, glass wool or asbestos fibre which surrounds a perforated tubular member made of more rigid material, such as expanded metal, wire netting or gauze, and through which member gaseous currents can directly escape.

In such known silencers, the filling is of a composite construction and is usually made by rolling one end of a sheet of expanded metal into a tube, placing steel wool on the sheet and rolling the whole up into a cylinder so as to form a composite filling of alternate layers of steel wool and expanded metal. The cylinder is slipped into an open end of the silencer casing and then an end cap mounting the outlet of the silencer is fitted in the end of the casing and welded thereto.

An important disadvantage of this construction lies in the fact that the composite filling is permanently contained in the casing. In the course of time, this filling becomes loaded with oil and carbon and fails to damp high velocity sound waves.

The primary object of the present invention is to provide a silencer which does not possess this defect.

According to the present invention in a silencer of the kind referred to, the silencer casing is provided with a tubular liner which houses a filling of fibrous material surrounding a central perforated tube of more rigid material, the liner and its contents being a unit which is removable from the casing.

The liner may be secured in the casing by a clamping bolt and nut by which the end

caps of the inlet and outlet pipes are secured to the respective ends of the casing.

The tubular liner may be of any required cross section, such as cylindrical, tapered or oval in order to fit silencer casings of corresponding shape.

According to one form of construction, the liner is made of light gauge sheet steel formed into a tube with the longitudinal ends butt or lap welded. The ends of the tube may be pressed inwardly against the extreme ends of the filling so as to prevent end-wise spreading of the fibres.

It will be appreciated that when the filling of a silencer according to the invention becomes oiled up and carbon laden, it is only necessary to disconnect the end cap of the outlet pipe when the liner and its contents can be slidably withdrawn as a unit and a replacement readily fitted.

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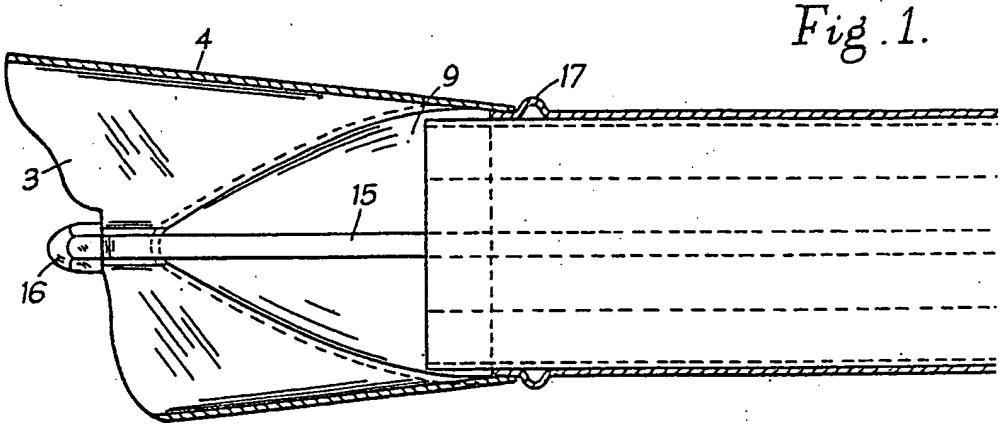
Fig. 1.



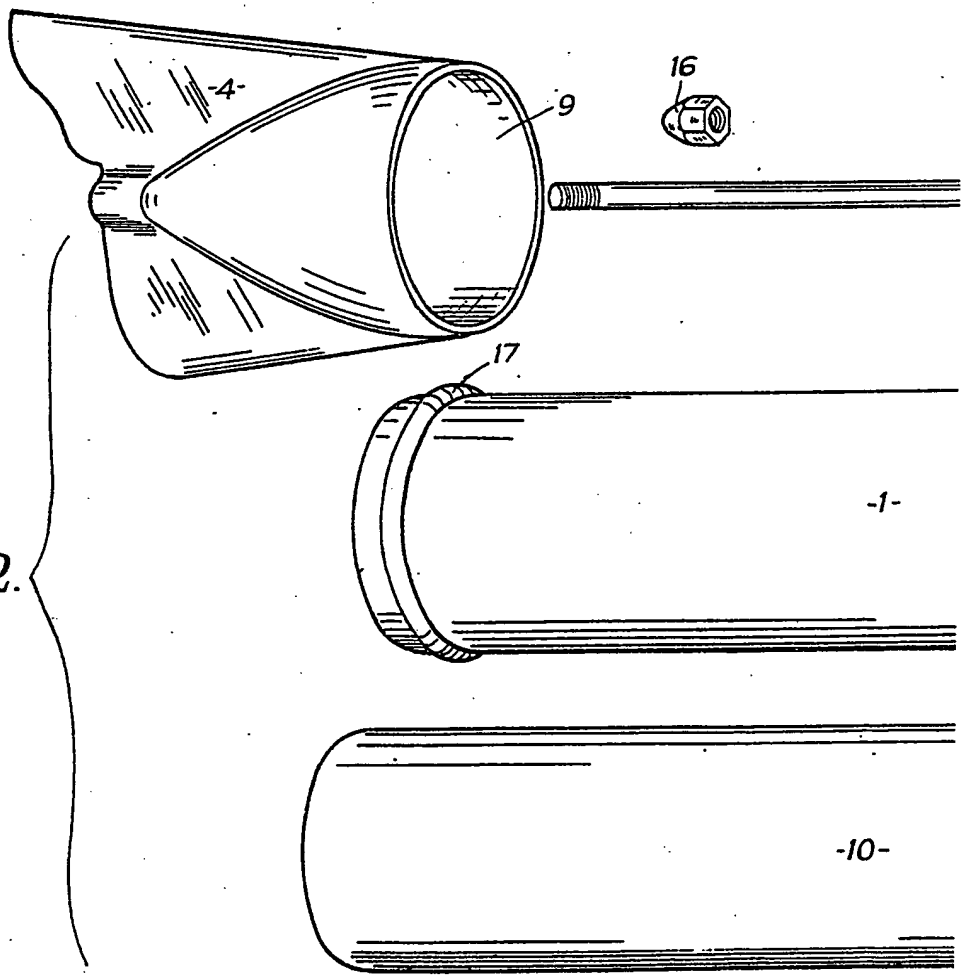


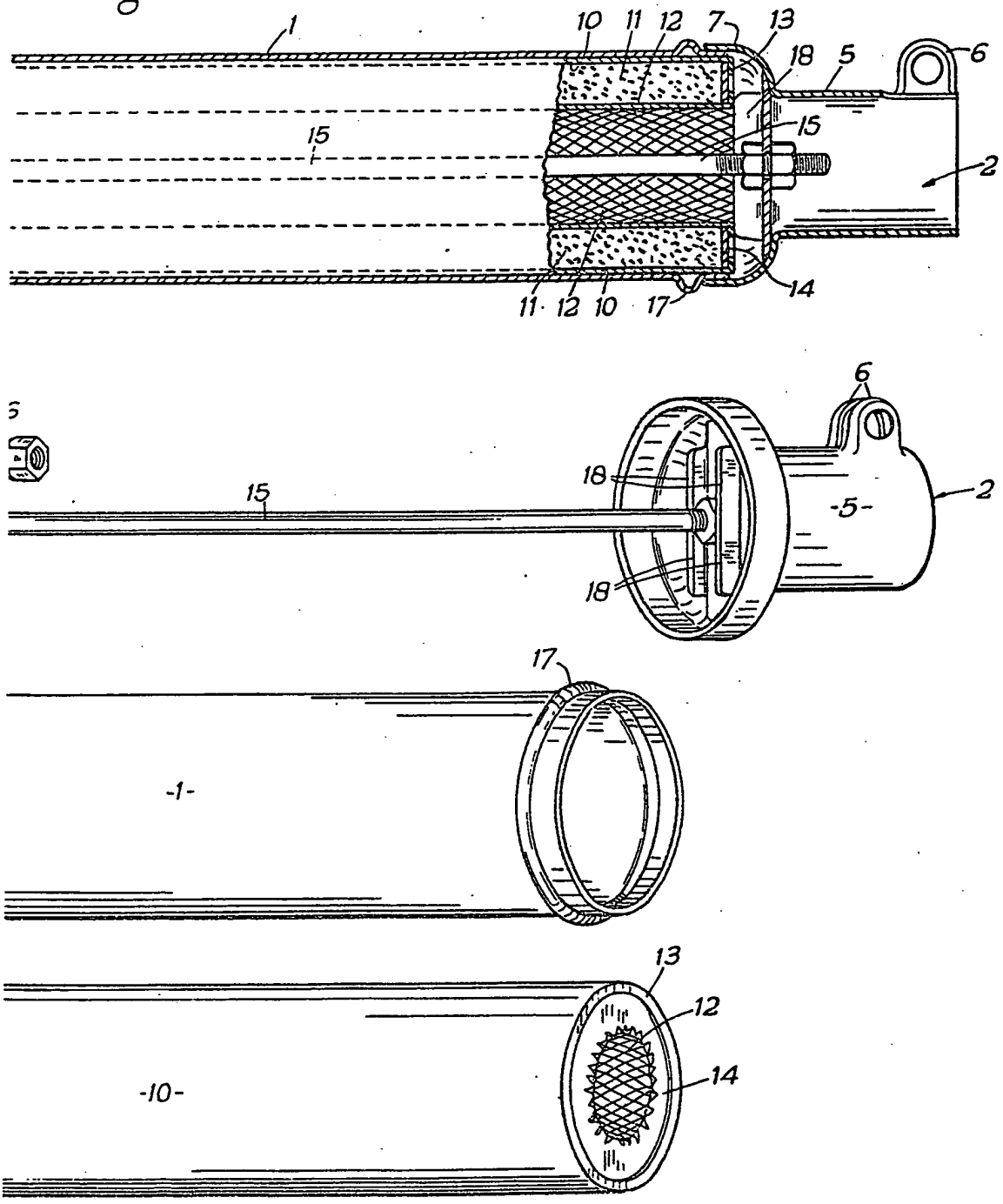
Fig. 2.

751,619 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

Fig. 1.



751,619 COMPLETE SPECIFICATION
1 SHEET

Fig. 1.

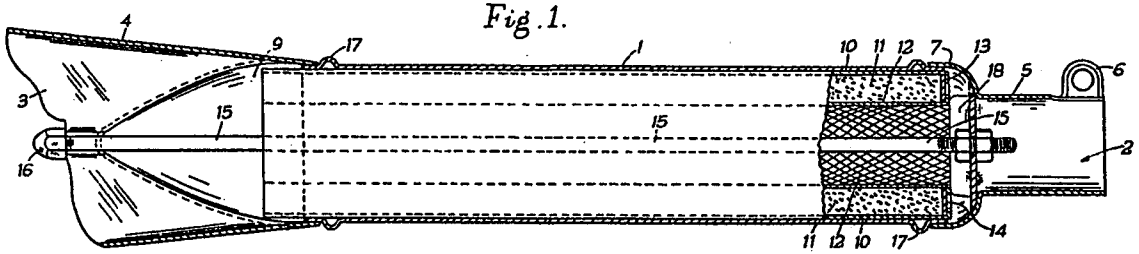


Fig. 2.